Discretionary measurement of Level 3 fair values during the 2008 Financial Crisis

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Abstract: In the absence of quoted prices in active markets, the measurement of fair values is complex and difficult to verify. Prior literature finds that investors discount fair value estimates based on unobservable inputs (i.e., Level 3). However, these value relevance tests cannot discern whether the discount is attributable to managerial opportunism or illiquidity concerns. This paper examines whether banks use Level 3 fair value estimates to manage earnings during the 2008 Financial Crisis. Based on a sample of 329 U.S. banks, we find that banks with earnings management incentives (i.e., low earnings, negative change in earnings, small negative earnings, and low Tier 1 capital) recognize lower-than-necessary losses on Level 3 positions. Our inferences are robust to alternative specifications including the use of bank fixed effects, placebo tests with Level 3 gains or losses recognized in other comprehensive income (OCI), and benchmarking against discretionary loan loss provisions (LLP).

Keywords: Level 3 fair values, earnings management, Financial Crisis, loan loss provisions (LLP), other comprehensive income (OCI)

JEL: G21, M41

We thank Jeffrey J. Burks, Luzi Hail, Zoltan Novotny-Farkas, Dieter Pfaff, Annelies Renders, Thorsten Sellhorn, Wayne B. Thomas, Marleen Willekens, and workshop participants at University of Leuven, University of Zurich, the 2010 EAA Annual Congress, and the 2010 AAA Annual Conference for helpful comments. We also thank Mai Blum, Jerome Halberkann, and Samuel Lang for research assistance.

1. Introduction

The 2008 Financial Crisis has intensified the debate on fair value accounting. As certain markets became illiquid during 2008, preparers of financial statements experienced serious difficulties in measuring the fair value of their financial instruments (Basel Committee on Banking Supervision 2008; IASB Expert Advisory Panel 2008). Fair value estimates based on valuation models with *un*observable inputs (i.e., Level 3) are difficult to verify (Ryan 2008; FASB 2008; FASB 2009). Therefore, Level 3 fair values provide substantial measurement leeway for the management. Although Level 3 assets or liabilities are not the major balance sheet positions of banks, gains and losses on Level 3 positions are economically relevant, as documented by the mean Level 3 income relative to equity of –1.2 percent and its standard deviation of 4.0 percent (see descriptive results in Section 4).

To date, empirical evidence on discretionary measurement of fair values is limited. Dechow et al. (2010) show that financial institutions use fair value gains or losses from asset securitization to smooth earnings. However, their findings might alternatively be attributable to real earnings management or a mechanical negative relation rather than discretion in fair value estimates (Barth and Taylor 2010). Recent value relevance research finds a lower valuation for "mark-to-model" fair values (Kolev 2009; Goh et al. 2009; Song et al. 2010). However, these tests on value relevance cannot distinguish whether Level 3 fair values are opportunistically overstated or whether investors apply a discount to the illiquidity of Level 3 assets during the crisis (Laux and Leuz 2010, p. 110).

This paper investigates whether banks use discretion in Level 3 fair value

estimates to manage earnings during the 2008 Financial Crisis, thereby shifting the focus from market perceptions to discretionary reporting outcomes. We select the crisis as the investigation period because (i) the market turmoil provides both measurement uncertainties and strong incentives for earnings management, (ii) concurrent research shows that certain banks overvalued their financial assets during the crisis (Huizinga and Laeven 2009; Laux and Leuz 2010; Vyas 2011), (iii) both the importance and measurement uncertainty of Level 3 fair values increased during 2008 (Ryan, 2008; FASB, 2008; and FASB, 2009), and (iv) the media and some academic literature claim that discretion in fair value measurement of illiquid assets was a major issue during the crisis (Laux and Leuz 2009; Kothari and Lester 2012).

However, empirically identifying earnings management during the 2008 Financial Crisis is difficult. First, the significant shock to banks during that period causes real effects on bank earnings that might confound with strategic earnings management. Therefore, to estimate the non-discretionary portion of Level 3 gains or losses, we develop a model capturing specific features of the crisis including bank size, business model, leverage, exposure to mortgage-backed securities, the relative importance of Level 3 positions, and transfers into or out of Level 3. In addition, we run regressions by using *bank fixed effects* to control for any unobserved differences between banks. Most importantly, we conduct "placebo" tests with Level 3 gains or losses recognized in other comprehensive income (OCI). OCI gains or losses, by definition, do not affect earnings, and thus they cannot be used to manage earnings. Therefore, finding *no* correlation between estimated discretionary Level 3 OCI and proxies for

earnings management incentives increases confidence that our main results are not simply driven by real effects attributable to the crisis.

We further acknowledge that other earnings management tools exist beside discretionary Level 3 gains or losses. We select loan loss provisions (LLP) as a benchmark for several reasons: Loans comprise a substantial portion of bank assets, and thus loan loss provisioning was central to bank earnings during the 2008 Financial Crisis (Barth and Landsman 2010). In addition, LLP may be subject to both timing and measurement discretion, as bank managers estimate changes in expected future loan losses. Finally, previous literature (e.g., Beaver and Engel 1996; Ahmed et al. 1999; Beatty et al. 2002) finds that banks use LLP to manage capital and earnings.

Given the importance of reported earnings by publicly held banks (e.g., DeAngelo et al. 1996; Barth et al. 1999; Beatty et al. 2002), we hypothesize that banks engage in earnings management. During weak financial periods, banks have particular incentives to manage earnings upwards (e.g., by avoiding write-downs) to improve both earnings and capital, and thus they forego financial distress. Therefore, we hypothesize that banks with low earnings *before* unrealized gains or losses (hereafter, "premanaged earnings") have incentives to increase earnings by discretionary measurement of unrealized gains or losses. Second, as banks have incentives to avoid earnings decreases (e.g., Beatty 2002), we expect that banks facing a negative *change* in premanaged earnings recognize income-increasing unrealized gains or losses. Third, we expect that earnings management incentives are particularly pronounced for banks with small negative premanaged earnings, as these banks might achieve reporting

positive earnings with little discretion effort (e.g., Burgstahler and Dichev 1997). Finally, we investigate whether banks with low premanaged regulatory Tier 1 capital engage in income-increasing earnings management, because regulatory capital is particularly important during bust times.

Using consolidated 10-Q and 10-K reports, we hand-collect data on unrealized holding gains or losses on Level 3 positions affecting net income (hereafter, "Level 3 income") from the disclosures required under Statement of Financial Accounting Standards (SFAS) 157, para. 32-33 (FASB 2006). As SFAS 157 became mandatorily effective for annual periods on or after 15 November 2007, our sample period is limited to Q1 2008 through Q1 2009. We additionally collect Level 3 gains or losses recognized in OCI to conduct our placebo tests.

To test our hypotheses, we follow a two-step procedure. First, we estimate the non-discretionary components of Level 3 income, Level 3 OCI, and LLP. We control for various non-discretionary components including bank fixed effects. Second, by using the residuals from the regressions, we test whether banks with incentives to manage earnings (i.e., low premanaged earnings, negative change in premanaged earnings, small negative premanaged earnings, and low premanaged Tier 1 capital) recognize more income-increasing discretionary gains or losses than the control group.

Based on a sample of 329 listed U.S. banks (1,215 observations), we find that banks manage both earnings and capital with discretionary Level 3 income. Specifically, banks with low premanaged earnings increase the reported return on equity (ROE) on average by 1.08 percent. Moreover, 84.3 percent of banks

switch from small negative premanaged earnings to positive *reported* earnings by recognizing discretionary Level 3 income. As we do not find evidence of earnings management for discretionary Level 3 OCI gains or losses, our main results are unlikely to be solely driven by real effects associated with the 2008 Financial Crisis.

We find that banks also use discretionary LLP to manage earnings. However, the empirical evidence is less consistent compared to the evidence from the Level 3 tests. A possible explanation for this result is that LLP were subject to increased scrutiny during the crisis, particularly after the Lehman collapse. While input factors of Level 3 estimates are by definition *un*observable, banks are required to disclose non-performing loans, which is a relatively non-discretionary and timely source of information about loan default (Liu and Ryan 2006). Consistent with that explanation, the coefficient estimates of the control variables reveal that a change in non-performing assets is one-to-one translated into a LLP.

We find no evidence that better corporate governance mechanisms reduce earnings management with discretionary Level 3 income. This finding can be interpreted as indication that (i) Level 3 positions are inherently difficult to verify, (ii) monitors can verify Level 3 fair value estimates but are powerless or not willing to intervene, or (iii) our corporate governance measure is biased to the extent that higher scores are associated with banks that are more severely affected by the 2008 Financial Crisis.

The findings contribute to the debate on fair value accounting (e.g., Plantin et al. 2008; Laux and Leuz 2009; Barth and Landsman 2010; Kothari and Lester

2011). We provide evidence that banks use discretionary fair value estimates to manage earnings. By examining *unrealized* gains or losses, we also deal with the critique of Barth and Taylor (2010) who provide alternative explanations for the findings of Dechow et al. (2010). Therefore, the results confirm concerns regarding the use of fair values in non-active markets, particularly because corporate governance mechanisms are essentially ineffective for reducing measurement discretion. In addition, our findings shed light on the reasons why investors apply a discount to Level 3 assets during the crisis (Kolev 2009, Goh et al. 2009, and Song et al. 2010). Our evidence supports the argument that banks overstated Level 3 assets, rather than the explanation that fire-sale or illiquidity concerns caused the valuation discount. Finally, by finding evidence that certain banks exploited the measurement leeway of financial assets to manage earnings during the 2008 Financial Crisis, the study adds to recent research on bank behavior during the crisis (e.g., Huizinga and Laeven 2009; Laux and Leuz 2010; Vyas 2011; Badertscher et al. 2011).

The results are subject to caveats. First, detecting and measuring earnings management is difficult (Dechow et al. 1995). However, we deal with this issue by running several modifications of the model, and we obtain consistent results across different model specifications. In particular, we include *bank fixed effects* to control for omitted correlated variables, and we conduct placebo tests with Level 3 gains or losses recognized in OCI. Second, although using the prominent bank earnings management tool LLP as a benchmark, we acknowledge the existence of other tools for earnings management. Specifically, we do not cover the timing of investment security gains (e.g.,

Scholes et al. 1990; Beatty et al. 2002) or discretionary gains from asset securitizations (Dechow et al. 2010). However, given the intense debate on fair value measurement, our focus is intentional. Third, when examining fair value measurement discretion, we cover only Level 3 fair values, not Level 1 and Level 2 positions. Level 2 fair values may be subject to measurement discretion, as they are also based on valuation models. However, we cannot conduct such tests, as SFAS 157 does not require disclosure on unrealized gains or losses on Level 2 positions.

The remainder of this paper is organized as follows. Section 2 discusses the relevant literature and develops the hypotheses. Section 3 describes the research design. Section 4 outlines the sample selection process and provides descriptive statistics, Section 5 presents the main results, and Section 6 provides additional analyses. Section 7 concludes.

2. Literature review and hypotheses

2.1 Earnings management of banks

According to the Conceptual Framework for Financial Reporting of the Financial Accounting Standards Board (FASB), the objective of financial reporting is to provide information that is *useful* to decision makers (FASB 2010). Financial information subject to earnings management does not meet this objective. However, the recognition or measurement (or both) of certain balance sheet items is based on significant management assumptions. As these items are difficult for outsiders to verify, they provide opportunities for engaging in earnings management.

In the field of bank accounting, previous literature focuses on discretionary LLP (e.g., Beaver and Engel 1996; Ahmed et al. 1999; Beatty et al. 2002). LLP offer room for manipulation, as bank managers estimate changes in future loan losses. In addition, research shows that banks manage earnings with the timing of realized gains from security transactions (e.g., Scholes et al. 1990; Beatty et al. 2002).

Spurred by the Financial Crisis, recent bank-related studies examine the discretion afforded by the accounting for financial instruments. Song (2008) finds that banks use the transitional provisions of the fair value option under SFAS 159 to remove accumulated losses on investment securities. Moreover, Song (2008) finds that banks meet earnings targets by managing earnings with the fair value option. Dechow and Shakespeare (2009) and Dechow et al. (2010) show that financial institutions use fair value gains or losses from asset securitization to smooth earnings. Huizinga and Laeven (2009) find that banks use the discretion in the classification of financial instruments to manage earnings upwards. By classifying mortgage-backed securities as financial assets held-to-maturity (HTM), banks are not obligated to recognize unrealized fair value losses, and thus the assets are overvalued. Vyas (2011) demonstrates that write-downs are not timely recognized during the Financial Crisis. Using a sample of four large U.S. banks, Laux and Leuz (2010) find descriptive evidence that reported loan losses of banks are smaller than loan loss estimates by external parties. This finding suggests that banks use the discretion in accounting rules to avoid write-downs on their loan portfolios.

2.2 Hypotheses

To examine whether banks use measurement discretion to manage earnings, we focus on unrealized gains or losses on Level 3 positions (i.e., Level 3 income). The measurement of Level 3 fair values is based on models with unobservable, firm-supplied valuation inputs. Therefore, the resulting fair values are difficult, if not impossible, for outsiders to verify (Ryan 2008). Management may use this leeway to engage in earnings management.

We select the 2008 Financial Crisis as the investigation period because it offers both opportunities and incentives for managing earnings. First, Amiram et al. (2010) show that, in 2008, U.S. capital markets strongly reacted to announcements of write-downs on asset-backed securities, impairments on retained interests, and losses on loans. In addition, banks that were severely affected by the crisis had incentives to forego the downward spiral by recognizing lower-than-necessary losses on financial instruments. Second, certain markets for financial instruments became illiquid during the 2008 Financial Crisis. For these positions, quoted prices in active markets are not available for determining the fair values. When fair values cannot be marked-to-market, the management must use assumptions to estimate the fair value. Given these substantial measurement uncertainties, the crisis provides unique opportunities for managing earnings through discretionary measurement of fair values.

However, the measurement uncertainty during the 2008 Financial Crisis makes disentangling strategic earnings manipulation from simple estimation error difficult. Therefore, we additionally conduct a placebo test with Level 3

gains or losses recognized in other comprehensive income (OCI). As such gains and losses do not affect reported earnings, earnings management should not be observed for Level 3 OCI. To the extent that Level 3 income and Level 3 OCI are similarly affected by the crisis, the use of Level 3 OCI as a "placebo" reduces concerns that our main tests are biased by real effects associated with the 2008 Financial Crisis.

We use LLP as a benchmark to Level 3 income. As loans comprise a large portion of bank assets, LLP is central to bank earnings (Barth and Landsman 2010). In addition, previous literature identifies LLP as possible earnings management tool for banks. We conduct the same analyses for LLP as for Level 3 income and compare the results across both income statement items. To enhance comparability across Level 3 income and loan loss provisions, we label LLP as a *negative* amount (i.e., loan loss provisions multiplied by –1), so that negative values denote a decrease in earnings (Nichols et al. 2009, p. 111).

Following previous literature (e.g., Wahlen 1994; Dechow et al. 2010), we expect that banks with low or negative earnings before discretionary income (i.e., premanaged earnings) improve their reported earnings by exercising income-increasing discretion (e.g., lower-than-necessary Level 3 losses). We thus state the following earnings management hypothesis:

Hypothesis 1: Discretionary Level 3 income (LLP) is higher for banks with low premanaged earnings than for the control group.

In addition to the absolute level of earnings, we predict that banks have

incentives to manage earnings depending on the *change* in premanaged earnings from the previous to the current quarter (e.g., Beatty et al. 2002; Dechow et al. 2010). For example, a bank reporting a positive change in earnings signals a positive trend to the market, irrespective of whether the absolute level of earnings remains negative. Our second hypothesis is thus as follows:

Hypothesis 2: Discretionary Level 3 income (LLP) is higher for banks with negative *changes* in premanaged earnings than for the control group.

Earnings management is particularly attractive when premanaged earnings are just below the threshold of zero, as only little discretion effort is required to report positive earnings. Therefore, incentives to engage in earnings are typically "kinky" around zero (Burgstahler and Dichev 1997). We predict that banks with small negative earnings have particular incentives to recognize income-increasing unrealized gains or losses.

Hypothesis 3: Discretionary Level 3 income (LLP) is higher for banks with small negative premanaged earnings than for the control group.

Finally, previous banking literature shows that regulatory capital is particularly important to banks (e.g., Beatty et al. 1995; Ahmed et al. 1999). In addition, as many banks struggled with regulatory capital requirements during the crisis, maintaining a sufficient capital ratio is a major reporting objective.

Therefore, we predict that banks use measurement discretion to increase regulatory Tier 1 capital.

Hypothesis 4: Discretionary Level 3 income (LLP) is higher for banks with low premanaged Tier 1 capital ratios than for the control group.

3. Research design

3.1 Estimation of discretionary income

3.1.1 Discretionary Level 3 income

To test our hypotheses, we first estimate discretionary Level 3 income (*DL3INC*). We regress Level 3 income (*L3INC*) on explanatory variables and define the regression residuals as discretionary Level 3 income (*DL3INC*).

We scale Level 3 income with the beginning book value of equity. As the total assets of a bank are typically very large, scaling with equity results in "more meaningful figures" (Dechow et al. 2010, p. 10). Furthermore, the return on equity is considered to be the "most common measure for bank performance" (ECB 2010, p.5), and executive compensation contracts are typically linked to returns on equity (e.g., Lambert and Larcker 1987; Cadman et al. 2010).[1]

By definition, fair value gains or losses are *unrealized*. SFAS 157, para. 32, defines unrealized gains or losses included in earnings as gains or losses relating to assets or liabilities still held at the reporting date (FASB 2006). Level 3

[1] However, given the criticism of scaling by equity (Barth and Taylor 2010), for robustness, we scale *L3INC* by lagged total assets in Section 6.

positions measured at fair value on a *non*-recurring basis are infrequently measured at fair value; however, if they are, they may be subject to measurement discretion. In addition, as bank managers may also exercise measurement discretion on liabilities, we include unrealized gains or losses on Level 3 liabilities in our proxy for *L3INC*. Therefore, we consider fair value adjustments on recurring Level 3 assets, recurring Level 3 liabilities, and non-recurring Level 3 assets for *L3INC*. We do not include unrealized Level 3 gains or losses recognized in OCI (e.g., changes in fair value of available-for-sale securities classified as Level 3), as they do not affect net income (FASB 1993).

To estimate the model, we pool data across bank-quarters. As Rogers (1993) suggests, we use heteroskedasticity-robust standard errors clustered by bank.[2] We estimate the following regression model:

$$\begin{aligned} L3INC_{it} = {} & \beta_0 + \beta_1 SIZE_{it-1} + \beta_2 LEVERAGE_{it-1} + \beta_3 NPA_{it-1} \\ & + \beta_4 MBS\_HTM_{it-1} + \beta_5 MBS\_AFS_{it-1} + \beta_6 MBS\_HFT_{it-1} \\ & + \beta_7 FVA3_{it-1} + \beta_8 FVL3_{it-1} + \beta_9 NR\_FVA3_{it-1} \\ & + \beta_{10} TRANSFER_{it} + \beta_{11-14} QUARTER_t + \beta_{15-18} SUBIND_i + \varepsilon_{it} \end{aligned} \quad (1)$$

where:

L3INC = unrealized (fair value) gains or losses on recurring and non-recurring Level 3 positions scaled by lagged equity;

[2] We do not use two-way clustered standard errors, as two-way clustering presumes homoscedasticity within clusters (Petersen 2009). This might be a strong assumption during the 2008 Financial Crisis. However, when alternatively estimating the regressions with two-way clustered standard errors (clustering across both quarters and banks), the absolute *t*-statistics increase rather than decrease.

SIZE = natural logarithm of total assets at the beginning of the quarter;

LEVERAGE = debt-to-assets ratio (leverage) at the beginning of the quarter;

NPA = non-performing assets at the beginning of the quarter scaled by lagged total assets;

MBS_HTM = mortgage-backed securities classified as held-to-maturity at the beginning of the quarter scaled by lagged total assets;

MBS_AFS = mortgage-backed securities classified as available-for-sale at the beginning of the quarter scaled by lagged total assets;

MBS_HFT = mortgage-backed securities classified as trading securities at the beginning of the quarter scaled by lagged total assets;

FVA3 = Level 3 assets at the beginning of the quarter scaled by lagged total assets;

FVL3 = Level 3 liabilities at the beginning of the quarter scaled by lagged total assets;

NR_FVA3 = non-recurring Level 3 assets at the beginning of the quarter scaled by lagged total assets;

TRANSFERS = net transfer of assets or liabilities into or out of Level 3 scaled by lagged total assets;

QUARTER = quarter fixed effects for each quarter from Q2 2008 through Q1 2009;

SUBIND = sub-industry fixed effects; and

ε = error term.

We include several explanatory variables to estimate the non-discretionary

portion of Level 3 income. Specifically, we control for exposure to mortgage-backed securities, as these financial instruments were a major source of risk during the 2008 Financial Crisis. Huizinga and Laeven (2009) find that banks use discretion in classification of the financial instruments to avoid reporting unrealized losses. Therefore, we distinguish between mortgage-backed securities classified as held-to-maturity (*MBS_HTM*), available-for-sale (*MBS_AFS*), and trading (*MBS_HFT*). According to SFAS 115, (i) changes in fair value of trading securities are recognized in the income statement, (ii) changes in fair value of available-for-sale securities are recognized directly in equity except for impairments, and (iii) securities held-to-maturity are measured at amortized cost (FASB 1993). Therefore, we expect the negative association between *L3INC* and exposure to mortgage-backed securities to be most pronounced for *MBS_HFT*.

We control for the relative importance for the bank's balance sheet. We distinguish three types of Level 3 positions: recurring Level 3 assets, recurring Level 3 liabilities, and non-recurring Level 3 assets. The intuition behind this distinction is that these positions may have different risk profiles and thus have different impacts on Level 3 income. Due to the high degree of illiquidity associated with Level 3 assets, we expect negative coefficients of *FVA3*, *FVL3*, and *NR_FVA3*.

TRANSFERS controls for the transfers into or out of Level 3. The transfer of large holdings into Level 3 indicates that no observable inputs are currently available for these holdings. In the absence of discretionary measurement, the bank likely immediately recognizes a loss on the transferred position in the

quarter of the transfer. Thus we expect a negative coefficient of *TRANSFERS*.

NPA controls for ex ante exposure to non-performing assets. Although non-performing assets typically consist of loans that are 90 days past due, we include *NPA* to control for non-discretionary *L3INC*, as the level of non-performing assets can affect non-recurring Level 3 gains or losses. We expect a negative coefficient of *NPA* because the recognition of Level 3 losses is more likely for large holdings in non-performing assets.

To account for the specific market conditions during the 2008 Financial Crisis, we use *SIZE* and *LEVERAGE* as additional control variables. We define *SIZE* as the natural logarithm of total assets. As large banks are more likely to be exposed to systemic risks in the loan portfolio, we predict a negative association between *SIZE* and *LLP*. We control for different financing structures by using the debt-to-asset ratio as a proxy for the bank's financial leverage. Given that banks with high leverage are likely to be in financial distress, and thus have to recognize large provisions for loan losses, we expect a negative coefficient.

To control for the bank's operational characteristics, we include fixed effects for the following sub-industries: savings and loans institutions, regional operating banks, investment services, and money center banks.[3] To control for differences in the macro-economic environment across periods, we include quarter fixed effects for all but the base quarter Q1 2008 (Wooldridge 2002).

[3] For example, Elliot et al. (1991) find significant differences in size, loan loss reserves, loan loss provisions, exposure to lesser developed countries, and capital adequacy ratios between money center banks and other banks. In addition, Scholes et al. (1990) and Beatty et al. (1995) include in their empirical analyses a dummy variable for money center banks.

3.1.2 Discretionary Level 3 OCI

We use discretionary Level 3 other comprehensive income (*DL3OCI*) as a placebo for *DL3INC*. To estimate *DL3OCI*, we regress Level 3 other comprehensive income (*L3OCI*) on the same explanatory variables as *L3INC*. *DL3OCI* is then used to perform identical statistical tests as we conduct with *DL3INC*.

$$L3OCI_{it} = \beta_0 + \beta_1 SIZE_{it-1} + \beta_2 LEVERAGE_{it-1} + \beta_3 NPA_{it-1} + \beta_4 MBS\_HTM_{it-1} + \beta_5 MBS\_AFS_{it-1} + \beta_6 MBS\_HFT_{it-1} + \beta_7 FVA3_{it-1} + \beta_8 FVL3_{it-1} + \beta_9 NR\_FVA3_{it-1} + \beta_{10} TRANSFER_{it} + \beta_{11-14} QUARTER_t + \beta_{15-18} SUBIND_i + \varepsilon_{it} \quad (2)$$

3.1.3 Discretionary LLP

Following Nichols et al. (2009), we define *LLP* as negative amounts. Thus negative values denote a decrease in earnings. With this definition, interpretation of *LLP* is both intuitive (i.e., negative amounts represent expenses) and enhances comparability with the Level 3 analyses.

To estimate the discretionary component of LLP we build on models used in previous research designs (e.g., Ahmed et al. 1999; Beatty et al. 2002; Kanagaretnam et al. 2004). We amend equation (1) to the following regression model:

$$LLP_{it} = \beta_0 + \beta_1 SIZE_{it-1} + \beta_2 LEVERAGE_{it-1} + \beta_3 NPA_{it-1} + \beta_4 \Delta NPA_{it}$$

$$+ \beta_5 LOANS_{it-1} + \beta_6 \Delta LOANS_{it} + \beta_{7-10}\, QUARTER_t$$

$$+ \beta_{11-14} SUBIND_i + \varepsilon_{it} \qquad (3)$$

where:

LLP	=	loan loss provisions multiplied by –1 scaled by lagged equity;
SIZE	=	natural logarithm of total assets at the beginning of the quarter;
LEVERAGE	=	debt-to-assets ratio at the beginning of the quarter;
NPA	=	non-performing assets at the beginning of the quarter scaled by lagged total assets;
ΔNPA	=	change in non-performing assets from the previous to the current quarter scaled by lagged total assets;
LOANS	=	gross loans (i.e., before loan loss allowance) at the beginning of the quarter scaled by lagged total assets;
ΔLOANS	=	change in gross loans from the previous to the current quarter scaled by lagged total assets;
QUARTER	=	quarter fixed effects for each quarter from Q2 2008 through Q1 2009;
SUBIND	=	sub-industry fixed effects; and
ε	=	error term.

In addition to the explanatory variables employed in the Level 3 income model (i.e., *SIZE*, *LEVERAGE*, *NPA*, *QUARTER*, *SUBIND*), we control for the development in the quality of the loan portfolio, by using the change in non-

performing loans (*ΔNPA*). If the quality of the loan portfolio worsens, we expect the provisions to increase. Thus we predict a negative coefficient between *ΔNPA* and *LLP*. We include gross loans (before loan loss allowance) as a percentage of total assets at the beginning of the quarter to control for the relative importance of loans for the bank's balance sheet. During bust times with higher default rates, a large loan portfolio before allowances is expected to induce higher LLP. Therefore, we predict a negative coefficient between *LOANS* and *LLP*. To control for the growth in loans, we include the change in gross loans from the previous to the current quarter. As a growing loan portfolio increases the likelihood of loan losses in economic downturns, we expect a negative coefficient of *ΔLOANS*.

3.1.4 Bank fixed effects

Although we include several control variables to explain the non-discretionary income component, our tests could nevertheless be biased by correlated omitted variables. For example, because of data limitations, we cannot control for possible determinants of unrealized gains or losses such as investments in collateralized debt obligations (CDOs), different loan characteristics beyond the already included controls, and risks associated with the consolidation of variable interest entities (VIEs).

We deal with possible omitted variables by including bank fixed effects along with the other control variables in models (1) through (3). We define the residuals from the fixed effects regressions as the discretionary income components *DL3INC_FE*, *DL3OCI_FE*, and *DL3LLP_FE*.

However, if earnings management is a firm-specific, time-invariant characteristic rather than a function of particular incentives to manage earnings, the inclusion of bank fixed effects confounds with our earnings management tests. In addition, fixed effects regression models assume time-constant omitted variables. This assumption may be open to question in this specific setting, that is, the 2008 Financial Crisis.

3.2 Incentives to manage earnings

To detect earnings management, we test whether *DL3INC* and *DLLP* are higher for banks with high incentives to manage earnings than for banks with low incentives (i.e., the control group). According to our hypotheses, we should observe this pattern for *DL3INC* and *DLLP*. As a placebo control, we additionally test the effects on *DL3OCI*. We do *not* expect a correlation between earnings management incentives and our placebo *DL3OCI*, as *DL3OCI* is not recognized in net income. If an earnings management pattern is observable for *DL3INC* and *DLLP* but not for *DL3OCI*, our tests are more likely to capture earnings management (bias) rather than estimation error (noise) induced by real effects of the 2008 Financial Crisis.

According to our hypotheses, we use four earnings management incentives. First, we define premanaged earnings (*NIBDL3INC* and *NIBDLLP*) are as net income minus (*NI*) estimated discretionary income (*DL3INC* and *DLLP*).[4] Following Kanagaretnam et al. (2004), we define *low* premanaged earnings as

[4] As *DL3OCI* is our placebo for *DL3INC*, we define the incentives (e.g., low premanaged earnings) for *DL3OCI* identical to the incentives for *DL3INC*.

NIBDL3INC (*NIBDLLP*) below the 25th percentile, and we define the control group as banks with premanaged earnings between the median and the 75th percentile.[5] According to Hypothesis 1, banks with low premanaged earnings recognize income-increasing *DL3INC* and *DLLP*. Therefore, we predict that these banks have (i) positive values of *DL3INC* and *DLLP*, and (ii) significant larger *DL3INC* and *DLLP* than the control group.

Our second incentive is a negative *change* in premanaged earnings. We compare discretionary income of banks where premanaged earnings have decreased (incentive group) to banks where premanaged earnings have increased (control group). In accordance with Hypothesis 2, we predict that *DL3INC* and *DLLP* are higher for banks with decreasing premanaged earnings compared to banks with increasing premanaged earnings from the previous to the current quarter.

As a third incentive, we use *small negative* premanaged earnings. Following Hypothesis 3, we test whether banks with small negative premanaged earnings recognize higher discretionary income than banks with small positive premanaged earnings. We define *SMALLNEG* as premanaged earnings that are in the interval just below zero. Following Beatty et al. (2002), we calculate this interval as twice the bin width used in the histograms of *NIBL3* and *NIBLLP*, respectively. We define the bin width of the histogram as twice the inter-quartile ranges of *NIBL3* and *NIBLLP*, respectively, multiplied by the negative cube root of the sample size (Degeorge et al. 1999). We then test whether the group

[5] Banks with premanaged earnings above the median (i.e., control group) have less incentive to manage their earnings upwards, as the median of premanaged earnings is above the threshold of zero (see Panel B of Table 4 in Section 5).

SMALLNEG has both income-increasing and significantly larger *DL3INC* and *DLLP* than the control group (i.e., banks with small positive premanaged earnings).

Our fourth incentive is low premanaged regulatory capital defined as the Tier 1 regulatory capital ratio minus discretionary income. In accordance with Hypothesis 4, we expect that *DL3INC* and *DLLP* are higher for banks with a low premanaged Tier 1 capital ratio than for banks with a high premanaged Tier 1 ratio. Similar to our first incentive, we define banks where the premanaged Tier 1 ratio is below the 25th percentile as low capitalized, and we define banks where the premanaged Tier 1 ratio is between the median and the 75th percentile as control group.

3.3 Alternative specifications of premanaged earnings

As our first additional tests, we use the discretionary income components as estimated with bank *fixed effects*. Accordingly, we define premanaged earnings as net income (*NI*) minus *DL3INC_FE* and *DL3LLP_FE*.

As the determination of premanaged earnings and premanaged Tier1 ratio is based on our estimation of *DL3INC* and *DLLP*, our main tests could be biased if estimation error in *DL3INC* and *DLLP* is correlated with premanaged earnings or premanaged Tier1 ratio. Therefore, we perform additional tests by defining premanaged numbers as net income (Tier1 ratio) minus *L3INC* and *LLP*, respectively. Subtracting the *full* amount of *L3INC* and *LLP* has the advantage that premanaged earnings cannot be mechanically correlated with the estimation of discretionary income. However, the disadvantage is that both

incentives and decisions to manage earnings base on earnings before *discretionary* income, but not on earnings before the *full* amount of unrealized income.

So far, we assume that the decision to manage earnings with either Level 3 income or LLP is independent. Indeed, bank managers may exploit measurement leeway on both financial assets. For example, it is likely that management faces increased scrutiny when exaggerating discretion in LLP, and thus discretionary Level 3 income is a welcomed alternative for managing earnings. If the decision to manage earnings with *L3INC* and *LLP* is not independent, then our incentive variables are already managed numbers themselves. Therefore, we perform our tests by defining our incentive variables as net income before *both DL3INC* and *DLLP*.

4. Sample description

To construct the sample, we use the database Thomson Reuters. The basic sample comprises 539 U.S. banks that apply SFAS 157. As SFAS 157 became mandatorily effective for annual periods on or after 15 November 2007, we collect quarterly data from Q1 2008 through Q1 2009. This procedure yields an initial sample of 2,695 observations. We exclude 618 observations because of missing data on net income, loan loss provisions, book value of equity, gross loans, or total assets in Thomson Reuters. We use Compustat to obtain data on non-performing assets (Compustat quarterly data item #99). Because some banks from the initial sample in Thomson Reuters are not covered by Compustat

or data is missing in Compustat, we exclude 40 observations. The sample for the LLP tests contains 2037 observations (421 banks).

[**Table 1 here**]

Using 10-Q and 10-K filings from EDGAR, we hand-collect data on unrealized Level 3 gains or losses on recurring and non-recurring fair value positions from the disclosures required by SFAS 157, para. 32–33 (FASB 2006).[6] We also hand-collect Level 3 OCI, Level 3 assets, Level 3 liabilities, non-recurring Level 3 assets, and Level 3 transfer information from the 10-Q and 10-K reports. We exclude 128 observations due to missing fair value data of banks with annual reporting periods ending in March, June, and September. We further exclude 311 observations without Level 3 positions. Using Call Reports from the database Bank Regulatory Holding Companies, we collect data on mortgage-backed securities (MBS). Due to missing Call Reports, the sample size is further reduced by 383 observations. These procedures yield a sample of 1215 observations, representing 329 U.S. bank holding companies.[7]

[**Table 2 here**]

Table 2 provides descriptive statistics for the regression variables. We are

[6] The hand-collection of Level 3 income and Level 3 OCI is necessary because commercial data providers do not provide data on fair value gains or losses on Level 3 positions.

[7] As a robustness check, we also use the smaller sample (i.e., only banks with non-zero Level 3 positions are included in the sample) for the tests of *LLP*. The results remain virtually constant, indicating that our inferences are not driven by different samples.

not surprised by the negative mean and median values of *L3INC*, *L3OCI*, and *LLP*. On average, banks report losses in lieu of gains on their financial assets. However, income-increasing earnings management is still possible by recognizing *lower*-than-necessary losses. A few banks even report Level 3 gains despite the crisis. The 75 percentile of *L3INC* is zero, indicating that some sample banks do not disclose Level 3 gains or losses, although they do have Level 3 positions in their portfolio. The mean of *LLP* is –0.022, whereas the mean of *L3INC* is –0.012, suggesting that the loan loss provisions are higher in magnitude than Level 3 income. Although recurring Level 3 *assets* are only 0.6 percent of total assets, Level 3 *income* is economically relevant, as documented by both the mean value relative to equity of –1.2 percent and the standard deviation of 4.0 percent.

The mean and median of gross loans as a percentage of total assets are 0.710 and 0.730, respectively. Therefore, loans are a major balance sheet position of banks. In Panel A, the mortgage-backed securities are predominantly classified as available-for-sale securities. As the 25th percentile, the median, and the 75th percentile of *TRANSFERS* are zero, banks do rarely (disclose) transfers from Level 1 and Level 2 into Level 3. The positive mean of 0.001 indicates that more assets were transferred into Level 3 than out of Level 3 during the sample period.

[Table 3 here]

Table 3 shows Pearson correlation coefficients of the regression variables.

The coefficients of the control variables have the predicted signs except for *ΔLOANS*, which is positively correlated with *LLP*. As expected, Level 3 exposure (*FVA3*, *FVL3*, and *NR_FVA3*) is negatively correlated with Level 3 income. Notably, mortgage-backed securities classified as trading (*MBS_HFT*) are negatively correlated with *L3INC*; whereas mortgage-backed securities classified as available-for-sale (*MBS_AFS*) are negatively correlated with *L3OCI*.

5. Empirical results

5.1 Estimation of discretionary income

First, we estimate the discretionary components of *L3INC*, *L3OCI* and *LLP*. Panel A of Table 4 reports the results of the OLS regression estimates of the variables that explain the non-discretionary part. In regressions (1) and (2), *L3INC* is the dependent variable, in regressions (3) and (4), *L3OCI* is the dependent variable, and in regressions (5) and (6), *LLP* is the dependent variable. Regressions (5) and (6) have an R^2 of 57.94 percent and 32.28 percent, respectively: the values are comparable to or even higher than previous research in which *LLP* is the dependent variable.[8] The R^2 values are lower in models (1) and (2), as well as in (3) and (4), indicating that the explanatory power of the model is lower for *L3INC* (*L3OCI*) than for *LLP*. Therefore, either our model for estimating *LLP* is better specified than the *L3INC* (*L3OCI*) model or,

[8] For example, the explanatory power of the model employed by Ahmed et al. (1999, p. 12) is 20.0%, and Beatty et al. (2002, p. 564) explain 21.0 percent of the variation in LLP. We attribute the higher explanatory power of our model to the additional inclusion of both the leverage ratio and the sub-industry dummies. However, we acknowledge that the model specifications are not identical, and thus the differences in R^2 should be interpreted with caution.

alternatively, Level 3 income is inherently more difficult to estimate than LLP.

Not surprisingly, the R^2 values of the regressions substantially increase when running the *fixed effects* regressions. In models (1), (3), and (5), the R^2 values increase to 40.9, 56.3, and 57.9 percent, respectively. While the signs of the estimated coefficients do not change substantially, the significance levels of some control variables decrease. We are not concerned by this result, because these bank-specific characteristics are likely to be captured by the fixed effects.

[Table 4 here]

The coefficients of the explanatory variables are broadly consistent with expectations. Banks with large amounts of non-performing assets relative to total assets tend to report lower *L3INC* and *LLP*. Notably, in models (5) and (6), the coefficients for ΔNPA of –0.932 and –1.026, respectively, indicate that a change in non-performing assets is one-to-one translated into a LLP. Furthermore, the significant negative coefficients of *SIZE* indicate that larger banks report unrealized losses rather than gains. Only mortgage-backed securities classified as trading securities (*MBS_HFT*) are negatively correlated with *L3INC*. This result is consistent with the findings of Huizinga and Laeven (2009) that banks avoid the recognition of unrealized losses on mortgage-backed securities by classifying these positions as either held-to-maturity or available-for-sale. As expected, the relative amounts of recurring and non-recurring Level 3 assets to total assets (*FVA3* and *NR_FVA3*) are negatively associated with Level 3 income. However, the coefficients are not significant at

the 10 percent level or below.

Panel B of Table 4 shows the distribution of the discretionary income components estimated with the regressions in Panel A without firm fixed effects (*DL3INC, DL3OCI, DLLP*) and with firm fixed effects (*DL3INC_FE, DL3OCI_FE, DLLP_FE*). The medians of *DL3INC* and *DLLP* of 0.005 and 0.004, respectively, indicate that the majority of banks underestimate unrealized losses and thus report higher earnings.

The reported net income as a percentage of beginning book value of equity (*NI*) is positive for the 25th percentile. Therefore, the majority of banks reported positive results despite the crisis, indicating that not all banks were similarly affected by the crisis. Alternatively, the positive *NI* may be the result of income-increasing earnings management.

The 25th percentile of premanaged earnings (*NIBDL3INC* and *NIBDLLP*) is negative for both net income before *DL3INC* and net income before *DLLP*, suggesting that these banks have strong incentives to manage their earnings upwards. The medians for *NIBDL3* and *NIBDLLP* are slightly positive (0.010 and 0.011). These banks have only few incentives to manage earnings upwards. Therefore, banks with above median premanaged earnings qualify as control group.

5.2 Earnings management tests

Table 5 reports the results of the earnings management tests. Panel A shows the mean values of *DL3INC*, *DL3OCI*, and *DLLP* across banks with earnings management incentives (i.e., low premanaged net income, negative change in

premanaged net income, small negative premanaged net income, and low premanaged Tier 1 capital) and the respective control groups. Untabulated median values and related tests yield to virtually identical results and inferences.

[Table 5 here]

Consistent with Hypothesis 1, banks with low premanaged income recognize both positive (i.e., income-increasing) discretionary Level 3 income (0.0108) and positive discretionary loan loss provisions (0.0032) to improve their reported earnings. The discretion in Level 3 is economically relevant, as the average bank with low premanaged earnings increases the reported return on equity (ROE) by 1.08 percent. However, while the difference in *DL3INC* of 0.0090 between the incentive group and the control group is significant (*t*-statistic = 3.72), the difference in *DLLP* of 0.0009 is not statistically significant. Therefore, we cannot accept Hypothesis 1 for loan loss provisions.

Consistent with Hypothesis 2, banks facing a negative *change* in premanaged earnings recognize (i) income-increasing Level 3 and LLP income, and (ii) significantly larger mean *DL3INC* and *DLLP* than the control group. In addition, untabulated results reveal that the earnings management pays off, as indicated by the non-negative and positive mean change in *reported* earnings of 0.0000 and 0.0001 for *DL3INC* and *DLLP*, respectively; compared to the negative mean changes in *premanaged* earnings of –0.0047 and –0.0023 for *DL3INC* and *DLLP*, respectively. Therefore, without earnings management, these banks would have to report a negative change in earnings; however,

because of their earnings management, these banks, on average, are able to signal a stable or even positive trend in earnings to the market, which is particularly important during bust times.

Consistent with Hypothesis 3, banks with small negative earnings recognize income-increasing *DL3INC* and *DLLP*. Although the amounts are larger than the amounts of the control group, the differences of 0.0040 (0.0025) for *DL3INC* (*DLLP*) are not statistically significant at conventional levels. A possible explanation of this result is that banks with small positive income (i.e., the control group) also increase their reported income to establish a "buffer" during bust times, so that the difference in earnings management behavior between banks with small negative and small positive premanaged earnings is not as pronounced as in normal periods (e.g., Burgstahler and Dichev 1997). Alternatively, the lower sample size (134 observations with small negative income; 204 observations with small positive income) favors accepting the null hypothesis of no difference between the incentive group and the control group. However, untabulated results show that 113 out of 134 (84.3%) banks switch from small negative premanaged net income to small positive *reported* income after recognizing discretionary Level 3 income. For *DLLP*, 116 out of 154 (75.3%) banks switch the sign of their earnings. Taken together, the findings suggest that a vast majority of banks with small negative premanaged earnings achieve to report positive earnings with only little discretion effort, which is consistent with theory (e.g., Burgstahler and Dichev 1997)

Consistent with Hypothesis 4, banks with low premanaged Tier 1 capital recognize positive (i.e., capital-increasing) discretionary Level 3 and LLP

income. The difference between low capitalized banks and the control group is significant (*t*-statistic = 2.17) for *DL3INC* but insignificant for *DLLP* (*t*-statistic = 1.07). However, although the increase in capital (untabulated) of 0.0009 (0.0004) for *DL3INC* (*DLLP*) is statistically significant (*t*-statistics = 5.86 and 2.13), we do not consider the improvement in the mean Tier 1 capital ratio (i.e., from 8.67% to 8.76% for *DL3INC*, and from 8.72% to 8.76% for *DLLP*) to be economically relevant.

For our placebo *DL3OCI*, we do *not* find that banks with earnings management incentives (e.g., low premanaged earnings) report significantly higher Level 3 income recognized in OCI. Therefore, our estimation of discretionary Level 3 income (*DL3INC*) is unlikely to be biased by real effects associated with the 2008 Financial Crisis. This finding supports the earnings management interpretation of the above results.

Panel B shows the results when estimating the discretionary income components with bank *fixed effects* (*DL3INC_FE*, *DL3OCI_FE*, and *DLLP_FE*). Accordingly, premanaged earnings are defined as net income minus *DL3INC_FE* and *DLLP_FE*, respectively. The results of Panel B are generally consistent with the results of Panel A with two exceptions: First, the difference in *DL3INC_FE* of 0.0038 between low capitalized banks and the control group is not statistically significant. Second, banks with low premanaged earnings recognize significant larger *DLLP_FE* than the control group, so that we can accept Hypothesis 1 when using fixed effects estimation. Again, we do *not* find an earnings management pattern for Level 3 OCI. Overall, our findings seem not to be biased by omitted correlated variables.

Panel C presents the results when we define premanaged earnings (regulatory capital) as net income (Tier1 capital) minus the *full* amount of *L3INC* and *LLP* instead of subtracting the estimated discretionary components *DL3INC* and *DLLP*. The results in Panel C show that, for example, banks with low earnings and capital before Level 3 income have positive mean *DL3INC* of 0.0117 and 0.0061, which are significantly higher than the mean *DL3INC* of the control groups. Taken together, the results in Panel C—based on an alternative definition of premanaged earnings—are broadly consistent with those from Panels A and B. This finding mitigates concerns that the estimated discretionary income is mechanically correlated with the incentive variables.

In Panel D, we define premanaged earnings as net income and Tier1 ratio before *both* discretionary Level 3 income and discretionary LLP. The results are generally consistent with the findings in Panels A, B, and C. Notably, the difference in mean *DL3INC* of 0.0121 (*t*-statistic = 6.20) between banks with low premanaged earnings and the control group is more pronounced than in the previous specifications. This result indicates that the earnings before *both* income measures (i.e., Level 3 and LLP) are relevant for bank managers' decision to engage in discretionary Level 3 measurement.

6. Additional analyses

6.1 The influence of corporate governance

Both the competence and independence of monitors are important for minimizing management-induced bias in accounting estimation (e.g., Jensen 1993; Penman 2007). Therefore, we predict that better corporate governance

mechanisms reduce opportunities for managing earnings. However, given the inherently large measurement leeway of Level 3 fair values (e.g., *un*observable valuation inputs), banks might be able to manage their earnings despite strong corporate governance. Consistent with this argument, Dechow et al. (2010) find only limited evidence that better monitoring reduces discretionary securitization gains. For LLP, however, boards and auditors can exercise scrutiny by verifying the non-discretionary component of LLP through disclosures of non-performing loans (Liu and Ryan 2006). Therefore, the monitoring ability is likely to be higher for LLP than for Level 3 income.

To test whether better monitoring reduces earnings management, we follow Vyas (2011) and we define the indicator variable *CG* that equals 1 if the 2007 industry-adjusted corporate governance quotient (CGQ) provided by the Institutional Shareholder Services (ISS) is above the sample median, and 0 otherwise.[9] Using an aggregated index has the advantage that a broad set of corporate governance tools is covered. Moreover, the tests may not be biased by arbitrary selection of corporate governance variables.

Due to missing corporate governance data, we exclude 16 (340) observations for the analysis with *L3INC* (*LLP*) as the dependent variable. The mean (median) CGQ of 59.29 (63.80) are generally larger for the *L3INC* sample compared to the mean (median) CGQ of 54.59 (57.30) for the LLP sample. We test whether the mean discretionary income components (*DL3INC*, *DL3OCI*, and *DLLP*) differ across (i) the four earnings management incentive variables,

[9] The index comprises 61 variables divided into eight categories: board structure, audit quality, charter and bylaw provisions, state of incorporation, ownership, executive and director compensation, progressive practices, and director education.

and (ii) strong (*CG* = 1) versus weak (*CG* = 0) corporate governance.

The difference in discretionary Level 3 income (untabulated) of 0.0107 between banks with low premanaged earnings and the control group is larger (*t*-statistic = 4.12) for the group with weak corporate governance compared to the difference of 0.0077 (*t*-statistic = 1.93) for the group with strong corporate governance. However, when calculating discretionary Level 3 income with bank fixed effects, we do not find any difference across corporate governance groups. Moreover, for other earnings management incentives (i.e., change in premanaged earnings and low premanaged capital), the results are opposite; that is, banks with strong corporate governance appear to engage in more earnings management. The results for LLP are similarly inconclusive.

Overall, when distinguishing between strong and weak corporate governance, we do not find a substantially different earnings management pattern for both Level 3 income and LLP as compared to the main tests. We interpret this finding as (i) corporate governance mechanisms were not effective during the 2008 crisis, or (ii) our corporate governance measure is not valid during the 2008 crisis, because the measure is usually positively correlated with size, but large banks were more severely affected during the crisis (see Panel A of Table 4).

6.2 The influence of the Lehman bankruptcy

The use of the 2008 Financial Crisis as a setting for observing discretionary measurement of unrealized gains or losses is twofold. On the one hand, the crisis provides both measurement leeway and strong incentives to engage in earnings

management. On the other hand, the market-wide measurement uncertainty makes disentangling strategic earnings manipulation from simple estimation error difficult.

After the Lehman collapse, financial markets experienced serious turbulences. Therefore, fair value measurement became even more difficult. However, market-wide scrutiny towards accounting estimates might have also increased after the Lehman bankruptcy. To test the influence of the Lehman collapse on banks' earnings management behavior, we split our sample period into *Pre_Lehman* (i.e., first and second quarter of 2008) and *Post_Lehman* (i.e., third and fourth quarter of 2008 and first quarter of 2009).[10]

[Table 6 here]

Table 6 presents mean *DL3INC, DL3OCI,* and *DLLP* across (i) earnings management incentives, and (ii) across time (i.e., *Pre_Lehman* vs. *Post_Lehman*). For discretionary Level 3 income, we do not find a different earnings management behavior before and after the Lehman collapse. If anything, Table 6 reveals that banks engaged in less capital management in the *Post_Lehman* period, as indicated by the insignificant difference of 0.0049 (*t*-statistic = 1.41) between banks with low capital and the control group, whereas the difference of 0.0094 is highly significant (*t*-statistic = 3.15) in the *Pre_Lehman* period. This finding might be attributable to higher regulatory

[10] The sample split also tackles concerns that our main results are solely driven by real effects associated with the market turbulences in the third and fourth quarter of 2008.

scrutiny for low capitalized banks after the Lehman bankruptcy. However, as the decreasing difference is mainly driven by the increase in *DL3INC* (from –0.0005 to 0.0023) of the control group, this interpretation should be taken with caution. When calculating discretionary Level 3 income with bank fixed effects, the results (untabulated) are virtually identical.

We find systematic less earnings management activities with discretionary LLP in the *Post_Lehman* period compared to the *Pre_Lehman* period. Specifically, neither banks with low premanaged earnings nor banks with low premanaged Tier 1 capital continue to recognize significantly more discretionary LLP than the control group after the Lehman collapse. We interpret this finding as evidence that LLP were subject to increased scrutiny after the Lehman bankruptcy, particularly for financially distressed banks (i.e., banks with low earnings and capital). This interpretation is supported by the finding that non-performing assets and the change in non-performing assets are one-to-one translated into a LLP (see Panel A of Table 4).

6.3 Scaling of unrealized gains or losses

Thus far, we have scaled both Level 3 income and LLP income by lagged equity, as the book value of equity is considered a meaningful measure of capital for banks (Dechow et al. 2010, p. 18). In addition, executive compensation contracts are typically linked to returns on equity (e.g., Lambert and Larcker 1987; Cadman et al. 2010). However, other research in the field of bank accounting scales the dependent variable by lagged total assets (e.g., Beatty et al. 2002). Furthermore, Barth and Taylor (2010) argue that scaling by equity

could result in a *mechanical* negative association between the dependent and independent variable: Due to capital constraints, every dollar allocated to loans or Level 3 fair values is a dollar less allocated to other banking activities. However, we expect the mechanical effect to be of minor relevance, as we use *unrealized* gains or losses. For robustness, we nevertheless scale the income-related variables (i.e., *L3INC, L3OCI, LLP,* and *NI*) by lagged total assets instead of lagged equity.

We repeat our analysis from Table 5 with the new scaling. For Level 3 income, untabulated findings suggest that banks with earnings management incentives engage in significantly more income-increasing discretionary Level 3 income than the control group. Therefore, our inferences for Level 3 income are not affected by the scaling methodology. However, the LLP results are (again) not fully consistent with banks using discretionary LLP to increase income.

7. Conclusion

This paper investigates whether banks used discretion in fair value estimates based on unobservable inputs (i.e., Level 3 fair values) to manage earnings during the 2008 Financial Crisis. We benchmark our tests against LLP, mainly because LLP are the major unrealized income statement item for banks. We further conduct placebo tests with Level 3 gains or losses recognized in OCI.

Using a sample of 291 U.S. bank holding companies from Q1 2008 through Q1 2009, we find that banks with incentives to manage earnings (i.e., low premanaged earnings, negative change in premanaged earnings, small negative

premanaged earnings, and low premanaged Tier 1 capital) recognize more income-increasing discretionary Level 3 income than the control group. We do not find evidence of earnings management for discretionary Level 3 OCI gains or losses, increasing confidence in our estimation of discretionary Level 3 income. We find no empirical evidence that better corporate governance reduces earnings management. We attribute this finding to the inherently low verifiability of Level 3 fair values. We thus identify some room for improvement regarding the disclosure and transparency of fair value measurements, particularly during times of financial instability. This view is consistent with the following SEC postulate:

> "While the Staff does not recommend a suspension of existing fair value standards, the Staff believes that a number of measures should be taken to improve the application and practice related to existing fair value requirements (particularly as they relate to both Level 2 and Level 3 estimates) including: […] Enhancing the existing disclosure and presentation requirements related to the effect of fair value in the financial statements […]." (SEC 2008, p. 202)

We find that banks also use discretionary LLP to manage earnings. However, the empirical evidence is less consistent compared to the evidence from the Level 3 tests. A possible explanation for this result is that LLP were subject to increased scrutiny during the crisis, particularly after the Lehman collapse. While input factors of Level 3 estimates are by definition *un*observable, banks are required to disclose non-performing loans, which is a relatively non-discretionary and timely source of information about loan default (Liu and Ryan 2006). Consistent with that explanation, the coefficient estimates of the control variables reveal that a change in non-performing assets is one-to-one translated

into a LLP.

Overall, the results indicate that certain U.S. banks managed their earnings during the 2008 Financial Crisis. Hence, the study confirms the concerns of several stakeholders. Specifically, the results on Level 3 income support arguments that the use of fair values in non-active markets is problematic. However, we neither accuse fair value accounting of having exacerbated the crisis nor provide arguments against the measurement principle “fair value” per se. Rather, we caution against a blind trust in accounting numbers that are based on subjective assumptions.

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TABLE 1

Sample selection

Process	# of Banks	Percent	# of Bank-Quarters	Percent
U.S. banks in database Thomson Reuters	539	100%	2,695	100%
./. Missing data in Thomson Reuters			(618)	
./. Banks that are not covered by Compustat			(40)	
= Sample for the tests of loan loss provisions	421	78%	2,037	76%
./. Missing fair value data in 10-Q and 10-K reports			(128)	
./. Observations without Level 3 positions			(311)	
./. Missing Call Reports in Bank Regulatory database			(383)	
= Sample for the tests of Level 3 income	329	61%	1,215	45%

This table outlines the sample selection process. The sample banks are initially identified from Thomson Reuters. We exclude: 618 bank-quarters due to missing data in Thomson Reuters and 40 bank-quarters due to missing data on non-performing assets (i.e., 32 banks in the Thomson Reuters sample are either not covered by Compustat or data on non-performing assets is missing in Compustat). For the tests of Level 3 fair value income, we require banks to have non-zero Level 3 balance-sheet positions, and thus, exclude 311 bank-quarters. We exclude: 128 bank-quarters due to missing data on fair values in the 10-Q and 10-K reports; and 383 observations due to missing Call Reports in the database Bank Regulatory Holding Companies.

TABLE 2

Descriptive statistics

Panel A: Summary Statistics for Level 3 Income (*L3INC*) and Level 3 OCI (*L3OCI*)

Variable	N	Mean	p1	p25	Median	p75	p99	Std. dev.
L3INC	1,215	-0.012	-0.194	-0.010	-0.001	0.000	0.025	0.040
L3OCI	1,215	-0.003	-0.072	0.000	0.000	0.000	0.017	0.017
Controls								
SIZE	1,215	7.841	5.332	6.741	7.547	8.565	13.320	1.604
LEV	1,215	0.907	0.825	0.895	0.910	0.924	0.949	0.025
NPA	1,215	0.014	0.000	0.005	0.010	0.019	0.065	0.014
MBS_HTM	1,215	0.006	0.000	0.000	0.000	0.000	0.097	0.021
MBS_AFS	1,215	0.079	0.000	0.020	0.068	0.116	0.317	0.071
MBS_HFT	1,215	0.001	0.000	0.000	0.000	0.000	0.024	0.004
FVA3	1,215	0.006	0.000	0.000	0.000	0.005	0.071	0.017
FVL3	1,215	0.001	0.000	0.000	0.000	0.000	0.022	0.004
NR_FVA3	1,215	0.012	0.000	0.001	0.004	0.013	0.074	0.037
TRANSFERS	1,215	0.001	-0.009	0.000	0.000	0.000	0.022	0.006

Panel B: Summary Statistics for Loan Loss Provision (LLP)

Variable	N	Mean	p1	p25	Median	p75	p99	Std. dev.
LLP	2,037	-0.022	-0.169	-0.026	-0.011	-0.004	0.000	0.034
Controls								
SIZE	2,037	7.475	5.208	6.448	7.138	8.088	12.415	1.489
LEV	2,037	0.899	0.738	0.890	0.907	0.923	0.949	0.041
NPA	2,037	0.012	0.000	0.004	0.009	0.016	0.061	0.013
ΔNPA	2,037	0.003	-0.009	0.000	0.001	0.004	0.024	0.006
ΔLOANS	2,037	0.015	-0.033	-0.002	0.010	0.021	0.190	0.048
LOANS	2,037	0.710	0.291	0.655	0.730	0.799	0.912	0.127

Panel A reports descriptive statistics of the regression variables for the *L3INC* sample. We define *L3INC* (*L3OCI*) as unrealized Level 3 gains or losses recognized in the income statement (other comprehensive income) scaled by lagged equity. *SIZE* is the natural logarithm of total assets. *LEV* is the debt-to-assets ratio. *NPA* are non-performing assets. *MBS_HTM*, *MBS_AFS*, and *MBS_HFT* are mortgage-backed securities classified as held-to-maturity, available-for-sale, and trading, respectively. *FVA3* and *FVL3* are recurring Level 3 assets and liabilities, respectively. *NR_FVA3* are non-recurring Level 3 assets. *TRANSFERS* denotes net transfers of assets and liabilities into or out of the Level 3 category. All balance sheet variables are both scaled by total assets and measured at the beginning of the quarter.

Panel B reports descriptive statistics of the regression variables for the *LLP* sample. We define *LLP* as loan loss provisions recognized in the income statement (i.e., negative amounts represent expenses and thus have a negative impact on earnings) scaled by lagged equity. *Δ NPA* is the change in *NPA* from the previous to the current quarter. *LOANS* are gross loans before loan loss allowances. *ΔLOANS* is the change in *LOANS* from the previous to the current quarter. All balance sheet variables are both scaled by total assets and measured at the beginning of the quarter.

TABLE 3

Pearson correlation coefficients

Panel A: Correlation Coefficients for *L3INC* and *L3OCI*

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
[1] *L3INC*	1											
[2] *L3OCI*	0.001	1										
[3] *SIZE*	-0.075***	0.014	1									
[4] *LEV*	0.018	-0.133***	-0.073**	1								
[5] *NPA*	-0.183***	0.004	-0.136***	0.105***	1							
[6] *MBS_HTM*	0.019	-0.025	0.060**	0.066**	-0.107***	1						
[7] *MBS_AFS*	0.045	-0.048*	0.233***	0.117***	-0.140***	0.134***	1					
[8] *MBS_HFT*	-0.129***	0.010	0.321***	0.085***	0.044	-0.042	0.002	1				
[9] *FVA3*	-0.062**	-0.263***	0.282***	0.083***	-0.029	0.050*	0.090***	0.235***	1			
[10] *FVL3*	-0.088***	0.029	0.226***	0.066**	0.103***	-0.004	-0.016	0.560***	0.266***	1		
[11] *NR_FVA3*	-0.087***	-0.004	-0.088***	0.004	0.210***	-0.053*	-0.088***	0.012	-0.038	0.015	1	
[12] *TRANSFERS*	-0.069**	-0.026	0.041	0.065**	0.003	0.110***	0.076***	0.086***	0.396***	0.019	-0.021	1

Panel B: Correlation Coefficients for *LLP*

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
[1] *LLP*	1						
[2] *SIZE*	-0.204***	1					
[3] *LEV*	-0.236***	0.102***	1				
[4] *NPA*	-0.420***	-0.029	0.141***	1			
[5] *ΔNPA*	-0.295***	0.002	0.0571**	0.235***	1		
[6] *ΔLOANS*	0.050**	-0.013	-0.078***	-0.157***	0.025	1	
[7] *LOANS*	-0.154***	-0.209	0.121	0.266***	0.192***	0.018	1

Panel A reports Pearson correlation coefficients between independent regression variables and the dependent variables *L3INC* and *L3OCI*. Panel B of the table shows Pearson correlation coefficients for the dependent variable *LLP*. See Table 2 for the definition of the variables. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

TABLE 4

Estimation of discretionary income

Panel A: Regression

Dependent variable		***L3INC***		***L3OCI***		***LLP***	
Variables	Predicted Sign	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	?	-0.505 (-1.32)	-0.054 (-0.55)	0.066 (0.68)	0.061 * (1.70)	0.165 (1.07)	0.139 *** (5.89)
SIZE	-	-0.020 (-0.93)	-0.002 *** (-2.69)	0.008 (0.74)	0.001 * (1.79)	0.006 (0.29)	-0.005 *** (-6.68)
LEV	-	0.655 (1.35)	0.070 (0.68)	-0.126 (-1.56)	-0.072 * (-1.84)	-0.158 (-0.64)	-0.112 *** (-4.11)
NPA	-	-0.349 (-1.23)	-0.479 *** (-3.76)	0.004 (0.04)	0.005 (0.09)	-0.947 *** (-4.81)	-0.853 *** (-7.35)
ΔNPA	-					-0.932 *** (-4.44)	-1.026 *** (-5.70)
ΔLOANS	-					-0.006 (-0.21)	-0.008 (-0.39)
LOANS	-					-0.073 (-1.37)	-0.012 (-1.59)
MBS_HTM	?	-0.079 (-0.83)	0.008 (0.27)	0.167 (0.95)	-0.012 (-0.43)		
MBS_AFS	?	0.099 (1.64)	0.021 (1.35)	-0.014 (-0.47)	-0.007 (-0.94)		
MBS_HFT	-	1.086 (0.74)	-0.932 * (-1.85)	0.485 (1.58)	0.038 (0.24)		
FVA3	-	0.019 (0.21)	-0.037 (-0.62)	0.113 (0.56)	-0.355 ** (-2.34)		
FVL3	?	-0.669 (-0.84)	-0.090 (-0.20)	0.103 (0.22)	0.409 *** (2.63)		
NR_FVA3	-	-0.032 (-1.27)	-0.058 (-1.32)	-0.009 (-0.80)	-0.005 (-0.80)		
TRANSFERS	-	-0.480 (-1.24)	-0.375 (-1.17)	0.053 (0.13)	0.331 (1.25)		
Quarter fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Sub-industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects		Yes	**No**	Yes	**No**	Yes	**No**
R^2		0.409	0.072	0.563	0.112	0.579	0.323
F-statistic		NA	2.93 ***	NA	3.01 ***	NA	30.29 ***
N		1,215	1,215	1,215	1,215	2,037	2,037

Panel B: Summary statistics for estimated discretionary components

Variable	**N**	**Mean**	**p1**	**p25**	**Median**	**p75**	**p99**	**Std. dev.**
DL3INC	1215	0.000	-0.179	-0.002	0.005	0.012	0.043	0.038
DI3INC_FE	1215	0.000	-0.132	-0.005	0.000	0.008	0.079	0.030
DL3OCI	1215	0.000	-0.057	-0.001	0.001	0.004	0.032	0.016
DL3OCI_FE	1215	0.000	-0.037	-0.002	0.000	0.002	0.032	0.011
DLLP	2037	0.000	-0.115	-0.005	0.004	0.012	0.041	0.028
DLLP_FE	2037	0.000	-0.075	-0.005	0.000	0.008	0.049	0.022
NI	1215	0.000	-0.308	0.002	0.015	0.024	0.072	0.067
NI	2037	0.003	-0.286	0.003	0.014	0.024	0.063	0.059
NIBDL3INC	1215	0.000	-0.272	-0.008	0.010	0.024	0.097	0.064
NIBDL3INC_FE	1215	0.000	-0.277	-0.007	0.013	0.026	0.086	0.065
NIBDLLP	2037	0.003	-0.248	-0.003	0.011	0.022	0.066	0.058
NIBDLLP_FE	2037	0.003	-0.251	-0.002	0.012	0.024	0.060	0.059

Panel A reports OLS coefficient estimates and, in parentheses, *t*-statistics based on heteroskedasticity-robust standard errors clustered by bank (Rogers, 1993). In models (1) and (2), *L3INC* is the dependent variable; in model (3) and (4), *L3OCI* is the dependent variable; and in models (5) and (6), *LLP* is the dependent variable. In models (1), (3), and (5), we include bank fixed effects. In all models, we include both quarter fixed effects and sub-industry fixed effects. See Table 2 for the definition of the variables. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).

Panel B reports the descriptive statitsitcs of the estimated discretionary components of *L3INC* , *L3OCI* and *LLP* ; reported net income scaled by lagged equity (*NI*); and net income before estimated discretionary gains and losses (e.g., *NIBDL3INC*).

TABLE 5

Discretionary income across earnings management incentives

Panel A: Mean discretionary Level 3 income, Level 3 OCI, and LLP

Premanaged earnings and capital	*N*	*DL3INC*	*DL3OCI*	*N*	*DLLP*
Incentive I: Net income before *DL3INC (DLLP)* below 25th percentile	276	0.0108	0.0007	275	0.0032
Control I: Net income before *DL3INC* (*DLLP)* between median and 75th percentile	276	0.0017	-0.0001	276	0.0023
Difference		0.0090 ***	0.0008		0.0009
t -statistic		(3.72)	(0.61)		(0.38)
Incentive II: Negative change in net income before *DL3INC* (*DLLP)*	606	0.0049	0.0002	572	0.0029
Control II: Positive change in net income before *DL3INC* (*DLLP)*	315	-0.0088	-0.0005	349	-0.0066
Difference		0.0137 ***	0.0007		0.0095 ***
t -statistic		(4.87)	(0.53)		(4.05)
Incentive III: Small negative net income before *DL3INC (DLLP)*	134	0.0063	-0.0018	154	0.0073
Control III: Small positive net income before *DL3INC* (*DLLP)*	204	0.0022	0.0013	232	0.0049
Difference		0.0040	-0.0030 *		0.0025
t -statisitic		(0.84)	(-1.72)		(1.31)
Incentive IV: Tier1 before *DL3INC* (*DLLP)* below 25th percentile	197	0.0078	-0.0003	197	0.0018
Control IV: Tier1 before *DL3INC* (*DLLP)* between median and 75th percentile	198	0.0019	-0.0010	198	-0.0017
Difference		0.0059 **	0.0008		0.0035
t -statistic		(2.17)	(0.39)		(1.07)

Panel B: Mean discretionary Level 3 income, Level 3 OCI, and LLP estimated with **firm fixed effects**

Premanaged earnings and capital	*N*	*DL3INC_FE*	*DL3OCI_FE*	*N*	*DLLP_FE*
Incentive I: Net income before *DL3INC_FE (DLLP_FE)* below 25th percentile	276	0.0093	0.0000	275	0.0054
Control I: Net income before *DL3INC_FE* (*DLLP_FE)* between median and 75th	275	-0.0020	0.0003	276	-0.0009
Difference		0.0112 ***	-0.0003		0.0064 ***
t -statistic		(3.53)	(-0.35)		(2.85)
Incentive II: Negative change in net income before *DL3INC_FE* (*DLLP_FE)*	595	0.0047	0.0000	570	0.0033
Control II: Positive change in net income before *DL3INC_FE* (*DLLP_FE)*	326	-0.0082	0.0001	351	-0.0061
Difference		0.0128 ***	-0.0001		0.0094 ***
t -statistic		(5.85)	(-0.12)		(5.12)
Incentive III: Small negative net income before *DL3INC_FE (DLLP_FE)*	100	0.0055	-0.0001	103	0.0041
Control III: Small positive net income before *DL3INC_FE* (*DLLP_FE)*	194	0.0025	-0.0003	213	0.0020
Difference		0.0029	0.0002		0.0021
t -statisitic		(1.44)	(0.17)		(0.98)
Incentive IV: Tier1 before *DL3INC_FE* (*DLLP_FE)* below 25th percentile	198	0.0047	-0.0008	197	0.0037
Control IV: Tier1 before *DL3INC_FE* (*DLLP_FE)* between median and 75th percentile	198	0.0009	0.0005	198	-0.0010
Difference		0.0038	-0.0013		0.0047 *
t -statistic		(1.36)	(-1.20)		(1.93)

(*continued on next page*)

TABLE 5 (continued)

Panel C: Premanaged earnings before **full** amount of Level 3 income (LLP)

Premanaged earnings and capital	*N*	*DL3INC*	*DL3OCI*		*DLLP*
Incentive I: Net income before *L3INC (LLP)* below 25th percentile	276	0.0117	0.0004	276	0.0003
Control I: Net income before *L3INC* (*LLP)* between median and 75th percentile	276	-0.0013	0.0004	276	0.0042
Difference		0.0130 ***	0.0001		-0.0039 *
t-statistic		(3.98)	(0.06)		(-1.81)
Incentive II: Negative change in net income before *L3INC* (*LLP)*	533	0.0067	0.0000	465	0.0045
Control II: Positive change in net income before *L3INC* (*LLP)*	388	-0.0088	-0.0001	456	-0.0061
Difference		0.0155 ***	0.0001		0.0106 ***
t-statistic		(5.76)	(0.10)		(4.69)
Incentive III: Small negative net income before *L3INC (LLP)*	48	0.0103	0.0035	13	-0.0036
Control III: Small positive net income before *L3INC* (*LLP)*	119	0.0095	-0.0018	25	0.0101
Difference		0.0008	0.0053		-0.0136
t-statisitic		(0.19)	(1.57)		(-1.54)
Incentive IV: Tier1 before *L3INC* (*LLP)* below 25th percentile	198	0.0061	-0.0005	197	0.0014
Control IV: Tier1 before *L3INC* (*LLP)* between 2nd and 3rd Quartil	197	0.0014	-0.0011	198	-0.0024
Difference		0.0047 *	0.0006		0.0038
t-statistic		(1.72)	(0.33)		(1.17)

Panel D: Premanaged earnings before **both** *DL3INC* and *DLLP*

Premanaged earnings and capital	*N*	*DL3INC*	*DL3OCI*	*N*	*DLLP*
Incentive I: Net income before *both DL3INC* and *DLLP* below 25th percentile	276	0.0135	0.0002	276	0.0059
Control I: Net income before both *DL3INC* and *DLLP* between median and 75th	275	0.0014	0.0003	275	0.0029
Difference		0.0121 ***	0.0000		0.0029
t-statistic		(6.20)	(0.04)		(1.44)
Incentive II: Negative change in net income before both *DL3INC* and *DLLP*	586	0.0049	-0.0001	586	0.0027
Control II: Positive change in net income before both *DL3INC* and *DLLP*	335	-0.0080	0.0001	335	-0.0067
Difference		0.0129 ***	-0.0002		0.0095 ***
t-statistic		(4.67)	(-0.15)		(4.02)
Incentive III: Small negative net income before both *DL3INC and DLLP*	186	0.0065	0.0011	186	0.0043
Control III: Small positive net income before boh *DL3INC* and *DLLP*	233	0.0020	0.0000	233	0.0033
Difference		0.0044	0.0011		0.0010
t-statisitic		(1.36)	(0.91)		(0.52)
Incentive IV: Tier1 before both *DL3INC* and *DLLP* below 25th percentile	197	0.0092	-0.0004	197	0.0035
Control IV: Tier1 before both *DL3INC* and *DLLP* between median and 75th percentile	198	0.0026	-0.0002	198	-0.0013
Difference		0.0066 ***	-0.0002		0.0048
t-statistic		(2.82)	(-0.09)		(1.61)

This table presents the mean discretionary Level 3 gains or losses recognized in income (*DL3INC*), discretionary Level 3 gains or losses recognized in OCI (*DL3OCI*), and discretionary loan loss provision (*DLLP*) for banks with earnings management incentives (i.e., low premanaged earnings, negative change in premanaged earnings, small negative premanaged earnings, and low premanaged tier 1 capital) and the respective control groups. Premanaged earnings is defined as net income minus the discretionary components of *L3INC* (*LLP*). Negative (positive) change in premanaged earnings is defined as current quarter premanaged earnings being lower (higher) than previous quarter premanaged earnings. Small negative income is defined as net income before discretionary income between zero and the negative value of four times the interquartile range over the cube root of the number of observations (Beatty et al. 2002). Premanaged Tier 1 capital is regulatory Tier 1 capital minus discretionary Level 3 income (LLP).

Panel A shows the mean values for *DL3INC*, *DL3OCI,* and *DLLP* estimated without firm fixed effects. Panel B shows the mean values for *DL3INC_FE* , *DL3OCI_FE* and *DLLP_FE* estimated with firm fixed effects. Panel C shows the results for *DL3INC*, *DL3OCI* and *DLLP* when premanaged earnings are measured before the *full* amount of Level 3 income and LLP, respectively (i. e., Level 3 income and LLP as reported). Panel D shows the results for *DL3INC*, *DL3OCI*, and *DLLP* when premanaged earnings are measured before *both DL3INC* and *DLLP*. ***, **, and * indicate that the means are significantly different at the 1%, 5%, and 10% levels, respectively, using a two-tailed *t*-test.

TABLE 6

Earnings management and the Lehman bankruptcy

		DL3INC		*DL3OCI*			*DLLP*	
Premanaged earnings and capital	*N*	*Pre Lehman*	*Post Lehman*	*Pre Lehman*	*Post Lehman*	*N*	*Pre Lehman*	*Post Lehman*
Incentive I: Net income before *DL3INC (DLLP)* below 25th percentile	43, 233	0.0108	0.0107	0.0017	0.0005	39, 236	0.0102	0.0020
Control I: Net income before *DL3INC* (*DLLP)* between median and 75th	124, 152	0.0025	0.0011	0.0003	-0.0004	128, 148	0.0047	0.0002
Difference		0.0083 **	0.0097 ***	0.0014 *	0.0009		0.0055 **	0.0019
t -statistic		(2.23)	(2.96)	(1.72)	(0.50)		(2.02)	(0.56)
Incentive II: Negative change in net income before *DL3INC* (*DLLP)*	136, 470	0.0065	0.0044	-0.0001	0.0003	145, 427	0.0050	0.0021
Control II: Positive change in net income before *DL3INC* (*DLLP)*	60, 255	-0.0142	-0.0076	0.0005	-0.0007	51, 298	-0.0100	-0.0060
Difference		0.0207 ***	0.0119 ***	-0.0006	0.0010		0.0151 ***	0.0081 ***
t -statistic		(3.21)	(3.83)	(-0.44)	(0.65)		(4.09)	(2.92)
Incentive III: Small negative net income before *DL3INC (DLLP)*	32, 102	0.0120	0.0045	-0.0021	-0.0017	236, 129	0.0020	0.0064
Control III: Small positive net income before *DL3INC* (*DLLP)*	62, 142	-0.0032	0.0046	0.0001	0.0018	148, 156	0.0002	0.0046
Difference		0.0153	-0.0002	-0.0022	-0.0034		0.0019	0.0018
t -statisitic		(1.19)	(-0.04)	(-0.84)	(-1.55)		(0.56)	(0.74)
Incentive IV: Tier1 before *DL3INC* (*DLLP)* below 25th percentile	62, 135	0.0089	0.0072	-0.0006	-0.0001	66, 131	0.0051	0.0001
Control IV: Tier1 before *DL3INC* (*DLLP)* between median and 75th	33, 165	-0.0005	0.0023	0.0000	-0.0012	32, 166	-0.0050	-0.0011
Difference		0.0094 ***	0.0049	-0.0006	0.0011		0.0101 **	0.0011
t -statistic		(3.15)	(1.41)	(-0.21)	(0.46)		(2.07)	(0.28)

This table reports mean discretionary Level 3 gains or losses regognized in income (*DL3INC*), discretionary Level 3 gains or losses recognized in OCI (*DL3OCI*), and discretionary loan loss provision (*DLLP*) before the Lehman collapse (i.e., first and second quarter of 2008) and after the Lehman collpase (i.e., third and fourth quarter of 2008 and first quarter of 2009). Identical to Panel A of Table 4, *DL3INC*, *DL3OCI*, and *DLLP* are estimated without firm fixed effects, and premanaged earnings is defined as net income before *DL3INC* (*DLLP*). ***, **, and * indicate that the means are significantly different at the 1%, 5%, and 10% levels, respectively, using a two-tailed t-test